Using Second Life for Health Professional Learning: Informing Multidisciplinary Understanding

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Abstract

Background: The pressures of working in contemporary health care environments can result in health professionals becoming focused on their own domain. This focus, while understandable, diminishes the ability to provide holistic care for patients and clients. This multidisciplinary project sought to introduce post graduate students to the work of three other disciplines and provided them with an opportunity to develop their communication and history taking skills in the virtual world of Second Life. The participating disciplines included: Midwifery, Mental Health, Medical Radiations and Chiropractic.

Methods: Four cohorts of Post Graduate students (n=210) participated in the project through a Course in their own Program. A stand-alone program area was set up on the website which was accessible to the four disciplines. A polyclinic was developed in a Second Life island, with each discipline having its own clinic room. Students were required to undertake a pre and post survey to measure their perspective of working with other disciplines; introduce their own discipline and write up what they have learned about the other disciplines, undertake and record an intra-disciplinary role play and finally, reflect on their learning.

Findings: students reported that working in Second Life provided them with an opportunity to practice their communication skills in a fun and non-threatening way. As the role play formed part of their assessment, many students found the process to be on a par with the work that would be required to develop an essay or other written assignment.

Conclusion: Second Life provides students with an opportunity to develop communication skills and their understanding of other disciplines.

Keywords

Second Life; Multidisciplinary Cooperation; Learning; Higher Education; Simulation

Introduction

Virtual simulation environments such as Second Life are increasingly being incorporated into health science curricula as they offer innovative ways of student interconnectivity that has not been available in the past[1, 2]. Utilising these types of virtual simulation provides opportunities for students to participate in presentations, discussions, role plays and performances which would otherwise only be available in a face to face context[1]. Once resources have been developed they can be re-used or modified and adapted for use in other simulation platforms.

The use of alternative learning environments such as Second Life offers students the opportunity to develop skills in problem solving, critical thinking, and communication and promotes constructivist learning[3-5]. This flexible, student centred approach offers enhanced opportunity for collaborative learning through real time interaction between students and their peers in a safe environment[2, 6]. Students can practice skills, make decisions and role play, thereby enhancing their preparedness for the workforce[7, 8]. Simulated learning activities have been identified as appropriate for skill development in teamwork and communication, patient assessment and history taking, all of which are relevant to the development of safe clinical practice. Student clinical experience has been described at times as ad hoc with various venues and clinical educators providing variable levels and quality of practical experience. Simulated learning environments offer a more structured approach which enhances the overall learning experience for students[9].

Simulated learning environments have been incorporated into a range of disciplines including

medical sciences [10-13], business [14] and architecture and design [15]. Until relatively recently, simulation in health sciences has largely consisted of the use of mannequins, phantoms and computer simulated planning and processing software.[16-19]Simulating patient interactions using semi-automated devices such as Sim Man occur in nursing, medical imaging, mental health, midwifery, radiation therapy and pharmacy.[20-27]This provides students with opportunities to develop skills that are complimentary to real world clinical practice.

The need to build workforce capacity is a high priority for governments. Simulated learning is seen as one key strategy in the education of health professionals which offers further options in a climate where there is high demand for clinical places for students[9]. In response to this strategy, a team of academics, representing health and medical sciences at RMIT University developed a module utilising virtual simulation.

The study design recognises that multidisciplinary attributes are highly valued by employers [28, 29]. Health professionals are expected to work effectively in multidisciplinary teams in order to provide safe, high quality and integrated care. It is therefore essential that entry level practitioners have a sound understanding of the functioning of multidisciplinary teams and are able to fully incorporate this into their clinical roles[30, 31].

There were two primary aims of the current study. Firstly, the study sought to investigate the use of a 'virtual' environment as a learning platform for health and medical science students to develop effective communication skills with patients. Secondly, the study aimed to promote multidisciplinary understanding amongst all participating students.

METHODOLOGY

The study utilized a descriptive intervention cohort methodology which was embedded in the course curriculum.

Learning &Teaching Theories Adopted in the Study

The learning and teaching theories of situated learning, constructivism, reflective learning, and Biggs constructive alignment were used as a basis for this study[32]. Situated learning has been shown to enhance quality learning.[32]This type of learning incorporates social and cultural facets of learning,

ensuring it is a meaningful experience.[33, 34]For this project, clinical scenarios were developed for students to practice their patient communication skills/interviewing skills in real time. The interactive nature of the activities provided a form of experiential learning that was quite different to other ways of learning. The immersive nature of Second Life enables students to interact with their patient avatars, construct and develop their conceptual understanding, and apply their learning in a social environment. Their learning experience is active, appropriate and more realistic.[35] The combination of approaches encourage students to develop their decision making skills and to reflect on their own learning[36]. Learning objectives are aligned with activities and outcomes. It was important to make learning objectives explicit[37, 38]as technological difficulties could have easily dominated student learning experience.

The Study

A 3D virtual simulation environment was developed to facilitate specific communication skills and to promote interdisciplinary understanding. The virtual environment was hosted in the RMIT Second Life Island. Student participants represented the four disciplines of Mental Health, Midwifery, Medical Imaging and Chiropractic – each working in their own discipline specific clinic setting. A single patient journey provided the link for all students and acted as a basis for their interactions with each other (intra disciplinary) and with the other disciplines (interdisciplinary) (Appendix 1).

Instructions on how to teleport direct to the RMIT Island Polyclinic (see Fig. 1). were developed The Polyclinic offered four health services including midwifery and mental health consulting rooms, chiropractic clinic, and diagnostic imaging facilities. On arrival, students were required to undertake a compulsory orientation tutorial of the 3D environment (see Fig. 2). The tutorial explained the essentials of working in Second Life (i.e. how to walk, fly, use the chat and voice functions). They were also introduced to their roles and responsibilities when working in Second Life. The introduction prepared the students for their interdisciplinary communications.

The students' first objective was to participate in intra disciplinary communication with their peers in a role play simulation conducted in their Second Life clinic. Students were allocated into groups of three and

were able to practice their role plays prior to recording and submitting for assessment. Each student took turns playing the role of clinician, patient and observer. It was the role of the observer to record the final video. Students submitted their own clinician recording for assessment. The focus of the academic assessor was on the students' history taking/ assessment skills and their overall interaction with the patient.

Students completed an Interdisciplinary Attributes Survey (Appendix 2) at two time points; once at the beginning of the semester (Time 1) prior to the commencement of the module, and then again at the end of the semester (Time 2). The current tool was modified and simplified from a validated tool developed by Parsell and Bligh which sought to assess the readiness of health care students.[39]

Fourteen interdisciplinary attributes were included in the survey after being identified as integral to interdisciplinary healthcare practice.[28, 29]Together, these attributes reflect firstly, the students' early multidisciplinary understanding and then, following their exposure to other disciplines, their current understanding. These attributes included practitioners' ability to work together as part of a team, learn from and about each other and their ability to share disciplinary knowledge and tolerate disciplinary differences. The survey sought to determine the level of importance students applied to each statement by using a three-point scale, ranging from 'Not Important' to 'Very Important'. The aim of these two surveys was to identify change over time in students' attitudes towards, and knowledge of, interdisciplinary attributes.

Students were required to participate in online discussion forums which were developed to enhance their understanding of the philosophies of the other disciplines and how they provide care. Students were asked to identify the dynamics and professional roles and responsibilities of each of the participating disciplines. The discussion groups were multidisciplinary. Once they had become familiar with the other disciplines, students posted a message in the forum about what they had learned. They could also ask questions of the group regarding any areas of uncertainty and it was expected that group members would then respond to clarify. Students could continue this discussion until they felt they had a better understanding of the issue that was raised. Each student was then required to reflect on what they had learned in the discussion forum.

Student reflection was an integral part of student learning. In the discussion forum each student was required to reflect on their own role play and that of a student from another discipline. Students were also asked to reflect on and evaluate their own learning throughout the Second Life experience by completing a voluntary Module Evaluation Survey (Appendix 3).

Results and Discussion

Participating Student Cohort

A total of 210 students were enrolled in four courses (subjects). Participation in the study was mandatory for the Chiropractic and Midwifery students but voluntary for Medical Imaging and Mental Health students. Students from the latter two disciplines who chose not to take part in the Second Life module could opt to write and assignment instead. Ninety three Chiropractic students and 43 Midwifery students participated in the study, while 17 Medical Imaging and 32 Mental Health students opted for the Second Life module instead of the traditional mode of assignment writing. The Second Life module formed part of student learning activities and constituted 40% of the total assessment of each of the four courses. Students were aware that the adoption of Second Life was a new learning and teaching initiative by the authors. As such, all feedback relating to the Second Life aspects of the course was voluntary and participating students were required to give explicit consent to having their feedback and learning activities included as part of the evaluation data for this study (n=186).

Of participating students, 52 (28.1%) completed the voluntary Module Evaluation Survey at the end of the semester. The majority of respondents (82.7%) were aged between 19 and 34, and females accounted for 59.6% of the sample. Nearly half of the respondents were Chiropractic students (44.2%), with Medical Imaging, Midwifery and Mental Health students distributed proportionately (19.2%, 19.2%, and 17.3% respectively).

Two-thirds of respondents frequently used their computers at home, rather than those available on campus or at work. This finding has implications for the adoption of any virtual web-based technology, as flexibility of any mode of online medium will be negated if the home computer specifications are not adequate for the purpose. None of the Midwifery

students had used online multi-user computer games previously, and more than two-thirds of the students had never used 3D online virtual simulation environments such as Second Life.

Findings

Objective 1: To Develop Effective Communication Skills via the Use of a 3DOnline Virtual Simulation Environment as a Learning Platform

Medical Imaging students reported viewing Second Life as an effective way to facilitate deeper learning about course content. This is reflected in 90% of this cohort stated that Second Life helped their learning compared to 10 – 28.8% of the other disciplines.

Medical imaging students, who had not yet been out on clinical placements, reflected that this experience introduced them to the topic and gave them greater confidence for their clinical experiences. This is evident from the following quote:

This activity [Second Life] enhanced my learning and understanding of the topic immensely. Mammography was a subject that we had not really been exposed to, apart from the 1 day of lectures by a guest lecturer. This task enabled me to gain a greater understanding of mammography and the challenges involved with this imaging modality and how an anxious patient might feel. [Medical Imaging student]

Over half of the Midwifery, Mental Health (66.6%) and Chiropractic students (60.9%) responded that Second Life was not a useful experience for them, which contrasted with the 70% of Medical Imaging students who agreed that it was useful for them. This result is illustrated in the following quote:

This learning activity definitely enhanced my learning and understanding of the anxiety patients experience when having a mammogram. I believe I can empathise more with patients since undertaking this activity. [Medical Imaging student]

The other three disciplines did not identify development of empathy as being an outcome from their participation in Second Life. This may be because the Midwifery and Mental Health nursing students were already practicing clinicians and have had to develop empathy in

their previous clinical work.

Chiropractic and Midwifery students described further enhancement of their patient history taking skills:

All in all the Second Life exercise has been a valuable experience, via listening to ourselves conduct a history and by listening to others conduct history on the same patient has allowed for me to identify key area mistakes which I have made and to see how others do the same thing and pick up on areas in which I can improve and to give and get reflection on the task is invaluable. [Chiropractic student]

Sixty percent of Medical Imaging students felt that the Second Life activities were valuable and agreed they would take another course that used Second Life.

Second Life has offered more than what text books or lecture notes could ever achieved. [Medical Imaging student]

This response is in contrast to the66.5% of Mental Health, 80% of Midwifery and 82.6% of Chiropractic students who indicated that they would not participate in another course that used Second Life.

Objective 2: To Promote Interdisciplinary Learning and Understanding amongst Healthcare Students

Statistical Analysis of Attitudes toward Interdisciplinary Attributes

Forty seven percent of participating students (n=87) completed the interdisciplinary Attributes Suver at Time 1 and Time 2. The statistical software package Predictive Analytics Software Grad Pack 18.0 (SPSS Inc, 2009) was used to analyse whether there were any differences between students' attitudes to interdisciplinary attributes at these time points. The means were calculated for both time points prior to being imported PASW.

A two-tailed paired samples t-test was performed to examine whether the mean scores at Time 2 (M = 2.68, SD = .38) were significantly larger than at Time 1 (M = 2.60, SD = .36). The results indicated that there was no significant difference between the mean scores at Time 1 and Time 2, $t(86) =$

1.651, p = .10, r = .20, 95% CI [-.04, .12] [1][40].

The mean scores were then broken down by discipline group to test whether there were significant differences between the Time 1 and Time 2 scores. Table 4 displays the mean scores across each discipline for the Interdisciplinary Attributes Survey at Time 1 and Time 2.

In order to test whether the differences between means at Time 1 and Time 2 were statistically significant, data were analysed using a 2 x 4 mixed factorial analysis of variance (ANOVA). A significant interaction with a moderate effect [2][41],was found between the two factors, Wilks' Λ = .90, F (3, 83) = 3.04, p = .03, $\eta 2p$ = .10, 95% CI [-.02, .22]. Because the interaction term was found to be significant, main effects were not considered.

Follow up testing of the interaction effect using simple main effects found that the mean scores from each of the disciplines were significantly different with a moderate to large effect at Time 1, F (3, 83) = 7.49, p < .001, $\eta 2p$ = .21, 95% CI [.06, .36], but that there was no significant difference between the disciplines at Time 2, F (3, 83) = .28, $\eta 2p$ = .01, CI [-.03, .05]. Post-hoc analyses with Bonferroni adjustments showed that the significant result at Time 1 was due to the fact that the mean scores from Medical Imaging students were significantly lower than those from the disciplines of Chiropractic (p < .001) and Mental Health (p = .04).

The results of the simple main effects analysis also showed that the mean scores from Medical Imaging students underwent a statistically significant change with a moderate effect from Time 1 to Time 2, Wilks' Λ = .88, F (1, 83) = 11.61, p = .001, $\eta 2p$ = .12, 95% CI [-.15, .40]. There was, however, no significant change for Chiropractic, Wilks' Λ = 1, F (1, 83) = .001, p =.98, $\eta 2p$ = .01, CI [-.02, .02], Mental Health, Wilks' Λ = .98, F (1, 83) = .25, p =.62, $\eta 2p$ = .01, CI [-.03, .03], or Midwifery students, Wilks' Λ = .99, F (1, 83) = .18, p =.67, $\eta 2p$ = .01, CI [-.03, .03].

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[1] Confidence intervals around the effect size were calculated using Soper's (2011) R-square confidence interval calculator

[2] The criteria for interpreting effect sizes in this report are based on Hopkins' (2009) guidelines.

These results showed a clear improvement in understanding of interdisciplinary attributes by the Medical Imaging students to the point that they achieved a similar score to the other disciplines who scored higher at Time One. This result is supported by the following quote:

The Second Life assignment allowed me to understand more of other disciplines and their general working roles. This has also demonstrated how these disciplines are likely to interact with each other in the working environment. [Medical Imaging student]

Notwithstanding the analysis results, the qualitative data shows that Midwifery, Mental Health and chiropractic students also identified an increased understanding of how other disciplines worked:

Using Second Life has allowed me to view disciplines other than nursing/midwifery, in which I have gained more insight into. Being able to interact with students from other disciplines has also allowed me to ask questions about their specific discipline which I was previously unsure about. [Midwifery student]

Besides experiencing a virtual world, I have learned about other disciplines such as what kinds of services or skills they have, how they manage their patients etc. It helped me to think about the importance of building good interdisciplinary relationships that would lead to better patient outcomes [Chiropractic student]

Students across several disciplines recognised the value of using a single patient journey to enhance their understanding of how other disciplines would manage their patient.

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It was an interesting experience learning about other health practitioners and how they see themselves in their work and the approach they took in the 'Sally' case study. I think we really learned that collaboration of disciplines will benefit the patient/client enormously as they have

access to a range of perspectives and treatments. [Mental Health student]

They also reflected that they now understood what each of the disciplines offered and how this would influence their ability to refer their patients in the future:

…having a greater understanding the role and scope of other disciplines will provide us confidence in making appropriate referrals and lastly promote the titrating of more thorough client centre care as necessary [Midwifery student]

[I acquired] a sense of where I might refer a patient to in the future if I was unsure of how to treat or manage a problem in one of these areas. [Chiropractic student]

TABLE 4 MEAN SCORES (AND STANDARD DEVIATIONS) FOR THE INTERDISCIPLINARY ATTRIBUTES SURVEY ACROSS DISCIPLINES

Phase	Chiropractic	Med.Img	Metal Health	Midwifery
	(n=52)	(n=15)	(n=12)	(n=8)
Time 1	2.71(.30)	2.25(.38)	2.61(.36)	2.55(.36)
Time 2	2.7(.36)	2.26(.37)	2.67(.42)	2.62(.46)

Student Engagement

The majority of Medical Imaging students (80%) felt they had effectively engaged in the Second Life experience, which was in contrast to the other disciplines (Midwifery 20%, Mental Health 11.1%, and Chiropractic 34.8%). Most of the Medical Imaging students (80%) reported having fun with Second Life, compared to only a minority of the other disciplines (Midwifery 10%, Mental Health 0%, Chiropractic 4.3%). The following quote from a Mental Imaging student sheds some light on this result: The 3D simulation was probably the main reason why I wanted to participate in Second Life. It provides a different platform of learning that was appealing because I was curious to see what it was all about. The 3D simulation was a fun experience and I do hope that once the glitches are all ironed it can be integrated into the medical radiation course. [Medical Imaging student]

Once technical issues were resolved, some of the Mental Health and Midwifery students reported that they found using the program to be fun.

However, the following quote represents the majority of reflections across the disciplines other than Medical Imaging:

My Second Life experience has been one of constant stress and frustration. The whole idea of Second Life had merit, but I think it looked a bit better on paper, than what it actually turned out like. I feel the stress created by the whole experience outweighed the learning experience. [Chiropractic student]

The experience of working in Second Life proved to be mixed for the four cohorts of students. The Medical Imaging students were more likely to report the advantages compared to the other disciplines who reported the activity was a waste of time.

Even though significant technological challenges were experienced, students never the less engaged with the process and completed all required assessment tasks.

Flexibility

The majority of students reflected that the online nature of Second Life offered flexibility for their learning as well as the opportunity to practice their role plays prior to recording and submitting for assessment.

I found that the most benefit of having a 3D virtual world was flexibility. It provided us to accomplish course work without physically being together. Although we could have met together, it was a good opportunity for being exposed to a virtual world. [Chiropractic student]

Technology

A number of students reflected that there was an inability to convey body language or facial expression which clinicians rely on in face-to-face clinical interactions

Second Life was however, unable to deliver the body language, eye contact and human interaction that is very important within examination procedures in the real word. [Medical Imaging student]

…you lose out on physical communication in the Second Life medium. [Chiropractic student]

The students felt that even though this was problematic for them, Second Life was an effective pre-clinical tool.

It is apparent that the Medical Imaging students

were better able to embrace the technological aspects of Second Life than their counterparts from the other disciplines. Half of the Medical Imaging students agreed to the statement "I felt as if I was communicating with a real person in Second Life" in contrast to only 22.2% to 30.8% of students from the other three disciplines. The other disciplines found the use of an avatar and the technology quite challenging. This disparity may be explained by Medical Imaging being a technology driven profession, hence students come into the program already technology savvy.

The significant technological challenges faced by students negated their overall experience of learning in Second Life. These issues included access, recording role plays and saving their files. In retrospect, the authors recognise that these challenges were more likely given that two thirds of participating students had not used any online multi-user computer games before undertaking the course.

The impact of these challenges diminished the overall learning experience as these students describe:

The main problem with Second Life was all the technical trouble we had. This really detracted from the ultimate objective of the Second Life module. The technical problems were very frustrating and after a while just became very irritating and it really took away from the fun and the learning opportunities, as we just got a little frustrated by the whole process. However once it was all sorted out, we did enjoy taking part in the activities (Medical Imaging student)

I understand that it allows us to interact with each other as we are on M-PIL, but program wise it was a bit of a nightmare from trying to get into the clinic or to film. I'm saying this thought from the perspective of someone who is not familiar with these programs. [Chiropractic student]

Recommendation

We were not prepared for the degree of technology problems that beleaguered this study. While it was recognised that some students would struggle with the technology, the extent of challenges around the recording of the role plays was not acceptable. Students who undertook their role plays from home found it easier than those who attempted to record on campus.

The review of student feedback showed that one of the difficulties was with the use of screen capture freeware, Cam studio (PC) or Quick time X with the sound flower extension (Mac).. They described is as not being user-friendly or easy to navigate. This has been noted and modified for the 2012 iteration of the project through the purchase of commercial recording software. The technology issues associated with the project meant that participating students faced challenges that were avoidable, and lessened their overall experience in Second Life.

Recommendations for the 2012 project include:

Recommendation 1: Use of commercial software to be used for recording of student role-plays.

Recommendation 2: A structured face-to-face orientation session will be conducted to introduce students to Second Life

Recommendation 3: Recognition of the requirements of students from each of the disciplines in terms of how the schedule of activities are presented and managed

Conclusion

Student learning outcomes in both the 2010 pilot study[42] and the current study identified more confidence in their communication with patients, a developing sense of patient empathy and being able to reflect more effectively on their learning[42]. Furthermore, students described enhancement of a range of skills including interviewing and history taking, and felt that their overall care of patients would be more confident and better managed.

Students recognised the flexibility of working in Second Life, however, these advantages were somewhat negated by the technological challenges they faced. The findings from this study have highlighted the need for careful planning for future iterations to ensure appropriate resources and technical support are provided from the beginning of the project.

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Appendices

Figures

1. Polyclinic

2. Second Life resource area

1. Common patient scenario

Sally Thompson, aged 29, is a primiparous woman who gave birth to Lexie 4 weeks ago.

Sally's pregnancy was uneventful and progressed well after some minor morning sickness in the early weeks of pregnancy.

Sally went into spontaneous labour at 41 weeks gestation. The labour was augmented with syntocinon; an epidural was administered for pain relief after 14 hours of labour. Birth was facilitated by ventouse extraction for maternal exhaustion following 24 hours of labour.

Baby Lexie was born with APGAR scores of 7 at 1 minute and 9 at 5 minutes and required no resuscitation. She weighed 3335gms at birth. The first breastfeed did not occur until after Sally was transferred to the postnatal ward 2 hours after birth. Lexie was sleepy and did not attach well at the first feed.

Breastfeeding during the 3 day postnatal stay was problematic with poor attachment and nipple trauma being noted. Lexie received several supplementary bottlefeeds of artificial formula due to poor feeding and weight loss greater than 10%.

Mother & baby were discharged on Day 4 breastfeeding, expressing and topping up with artificial formula. Lexie weighed 3050gms on discharge.

Sally has been expressing 8 times a day since discharge. She offers the breast, tops up with expressed breastmilk and offers artificial formula if needed.

Sally & Lexie were referred to the Midwife for review of feeding problems.

Sally tells the Midwife that Lexie has not attached well since birth and that it has always been challenging – particularly on the left breast. On inspection, both nipples are grazed with the left one worse than the right. On palpation the Midwife notes a firm, tender area in the left breast which is not relieved by feeding or expressing.

The Midwife notes that Lexie attaches quite well on the right side but has a shallow latch on the left. Sally complains of significant nipple pain when Lexie is attached on the left side and becomes teary and distressed.

2. Pre and Post Interdisciplinary Attributes Survey

Part 2:	INTERDISCIPLINARY ATTRIBUTES					
Please indicate the level of importance you would attach to **practitioners*** demonstrating each of the following interdisciplinary attributes *Practitioners: in this context, practitioners refer to mental health nurses, midwifes, chiropractors and radiographers.	**Level of importance of attribute** 1 = not important 2 = slightly important 3 = important 4 = very important 5 = extremely important					
1.1		**1**	**2**	**3**	**4**	**5**
Knowledge of what other disciplines value						
Ability to work with members from other disciplines						
Ability to learn from other disciplines						
Ability to learn about other disciplines						
Ability to listen to members from other disciplines						
Ability to negotiate with members from other disciplines						
Ability to share disciplinary knowledge with other disciplines						
Ability to communicate with members from other disciplines (e.g. openly, frequently…)						
Ability to show respect for members from other discipline						
Ability to reflect on own strengths and weaknesses when working with members from other disciplines						
Ability to understand own role when working in a team with members from other disciplines						
Ability to tolerate disciplinary differences						
Ability to manage power dynamics when working with others						
Ability to see that benefits of working with other disciplines outweigh any negatives (for example loss of autonomy, 'turf' etc)						

Module Evaluation Survey
Demographic

[1] What is your Program at RMIT University?

[2]   Age Range

[3] Gender
Computer Use

[4] How often do you use a computer at home?

[5] How often do you use a computer at University?

[6] How often do you use chat software / instant messenger (e.g. AOL, MSN, ICQ, etc)?

[7] How often do you use social networking sites (e.g. Facebook, MySpace, Flickr.)?

[8] How often do you use online multi-user computer games (e.g. World of Warcraft, Everquest, etc)?

[9] How often do you use 3D online virtual worlds such as Second Life?

[10] How often do you use social bookmarking sites?

[11] How often do you use the computer to access podcasts / webcasts?
Internet Access

[12] Do you use a high speed connection to the Internet from home or dial-up?

[13] Second Life Student Survey

[14] What communication tools did you use?

• None

• Second Life chat tool

• Second Life audio tool (Voice Over IP - VOIP)

• Tools outside of Second Life (discussion boards, chat, blog, etc)

• Other (explain in final comments)

[15] Student assessment workload is reasonable

[16] How would you classify your performance in this module (i.e. grades)?

• Excellent

• Above Average

• Average

• Below Average

• Poor

• Other (explain in final comments)

[17] Social Presence (immediacy and intimacy)

[18] I felt as if I was communicating with a real person in Second Life.

[19] I was able to be expressive in Second Life.

[20] I was comfortable interacting with other participants in Second Life.
Engagement

[21] I was engaged in the learning experience in Second Life.

[22] Second Life was an enriching experience.

[23] The learning experiences were active and collaborative in Second Life.

[24] Using Second Life was fun and exciting.

[25] I was willing to put in the effort needed to complete the learning activities in Second Life.

[26] Second Life was a waste of time.
Online Learning Community

[27] The learning activity encouraged contact between myself and my classmates in Second Life.
Satisfaction

[28] I would take another course that used Second Life.

[29] I would recommend that the instructor continue using Second Life.

[30] I liked using Second Life as part of my course.

[31] Participating in Second Life was a useful experience.

[32] It was difficult to access Second Life.

[33] Getting into Second Life was easy.

[34] Technical support was available when I needed it in Second Life.

[35] I would avoid classes using Second Life in the future.

[36] I would not recommend this module to a friend.
Learning

[37] Second Life allowed me to better understand concepts.

[38] Using Second Life helped me think more deeply about course material.

[39] Second Life did not help my learning in the class.

[40] The pairing of students to work together on the learning activities is appropriate for the learning objectives
Online learning design (support, design, delivery, assessment)

[41] The introductory explanations on how to use Second Life were clear.

[42] The activity in Second Life was well-organized.

[43] I understood all components of the activity in Second Life.

[44] The instructions for Second Life were clear.

[45] The activity offered opportunities for interaction and communication in Second Life.

[46] The goals in Second Life were clearly defined.

[47] I understood what was expected of me in Second Life.
Open-Ended Questions

[48] How did Second Life impact your communication and interaction with others in this course?

[49] How was using Second Life different than using tools in a Course Management System, like discussions or chat tools?

[50] What was one thing that you would change about your experience in Second Life?

[51] What was one thing that you liked about your experience in Second Life?

[52] How did Second Life impact your learning for this module?

[53] What were the challenges in staging Second Life in a clinical context?

[54] From the perspective of a student, what was it like interacting with an avatar from Second Life?

[55] Is there anything else you would like to share with us about your experience?